Northwest Power and Conservation Council

September 29, 2010

MEMORANDUM

TO: Council Members

FROM: Terry Morlan
Director, Power Planning

SUBJECT: Presentation on Bonneville's Final Resource Program

Bonneville's Resource Program is its plan for meeting its need for energy, capacity and flexibility reserves. It is similar to, and guided by, the Council's Power Plan for the region, but is specific to the Bonneville system.

Bonneville staff worked closely with the Council staff during the development of the Sixth Power Plan and the Bonneville Resource Program. We held monthly meetings to ensure the two plans were consistent to the extent possible. In addition, Melinda Eden, then Power Committee Chair met with Bonneville management and staff to help coordinate planning activities of our two organizations.

Bonneville recently finalized its Resource Program. Suzanne Cooper and Birgit Koehler will brief the Council on key elements of the Resource Program. I have attached a copy of the Executive Summary. Additional information is available on the Bonneville website at http://www.bpa.gov/power/P/ResourceProgram/index.shtml.

Attachment

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B O N N E V I L L E P O W E R A D M I N I S T R A T I O N

2010 Resource Program

EXECUTIVE SUMMARY

September 2010

Cover photo of Klamath Cogeneration combustion turbines courtesy of Iberdrola Renewables.

2010 Resource Program
Executive Summary
September 2010

BPA has prepared a Resource Program to evaluate whether and what resources it may need to acquire to meet its power supply obligations, primarily to customers under Regional Dialogue contracts beginning in fiscal year 2012. The planning horizon extends through 2019. During preparation of the Resource Program, BPA coordinated closely with the Northwest Power and Conservation Council as it developed its draft and final Sixth Power Plan.

Recent events, including the current economic recession, have decreased BPA's near-term resource need. BPA expects to be able to meet most of its anticipated needs over the next few years through conservation—as called for by the Council's Sixth Power Plan—and short- and mid-term power purchases from the market. BPA, in partnership with public power, is committed to meeting public power's share of the Council's final conservation targets.

How much more power supply, if any, BPA will need to secure after achieving conservation targets will depend in large part on the outcome of a number of uncertainties about loads placed on BPA:

- Preference customer choices of power supplier(s) for their above-High Water Mark load beyond the initial election period
- Potential formation of new public utilities or tribal utilities that can place load on BPA
- Increased load service to DOE-Richland
- Long-term service to the region's direct-service industrial customers
- Wind power integration needs in the BPA balancing authority area

Other uncertainties that could affect BPA's need for additional resources include timing and strength of economic recovery, the rate of long-term load growth, fish requirements that impact hydro generation, success of conservation efforts, and others.

Depending on the outcomes of these uncertainties, BPA's largest and likeliest power needs after conservation are for:

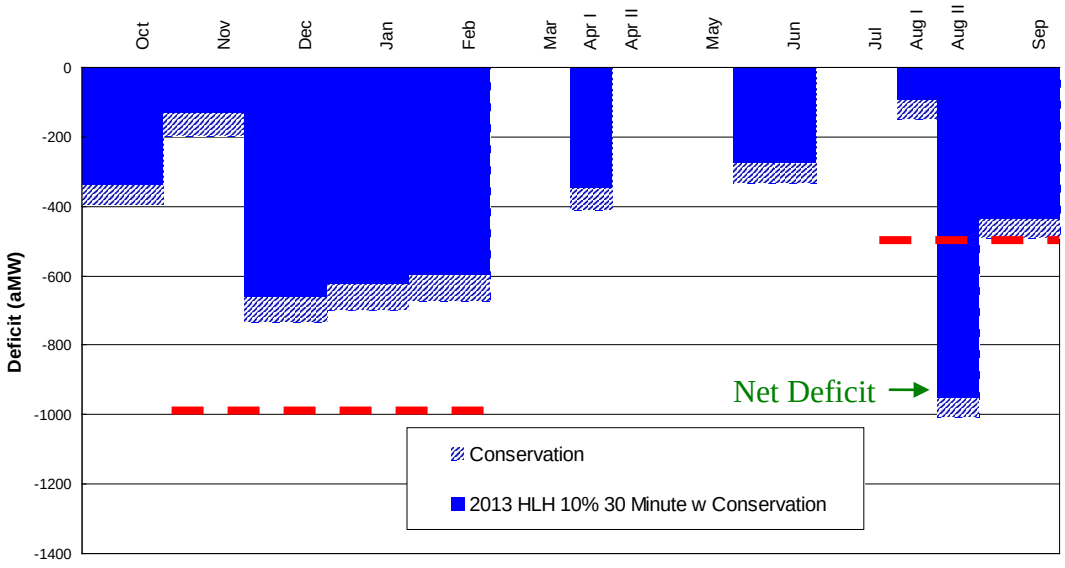
- Energy for seasonal and monthly Heavy Load Hour power demands in winter and late summer
- Balancing reserves to replace flexibility that has been lost in the system and to help support variable energy resources, such as wind power
- Annual energy, which may be met largely by short- to mid-term market purchases for seasonal needs

It appears that aggressive implementation of measures to meet public power's share of the conservation targets in the Council's Sixth Power Plan will address a significant portion of BPA's need for annual and seasonal Heavy Load Hour energy through 2013. Continued aggressive conservation efforts also are projected to meet a considerable portion of BPA's projected needs through 2019.

Short- and mid-term market purchases from the wholesale power market further diminish remaining seasonal energy needs to be served by long-term resource acquisitions. BPA expects to continue to rely on short- and mid-term market purchases for up to 500 megawatts of summer power supply and up to 1,000 megawatts of peak winter power supply.

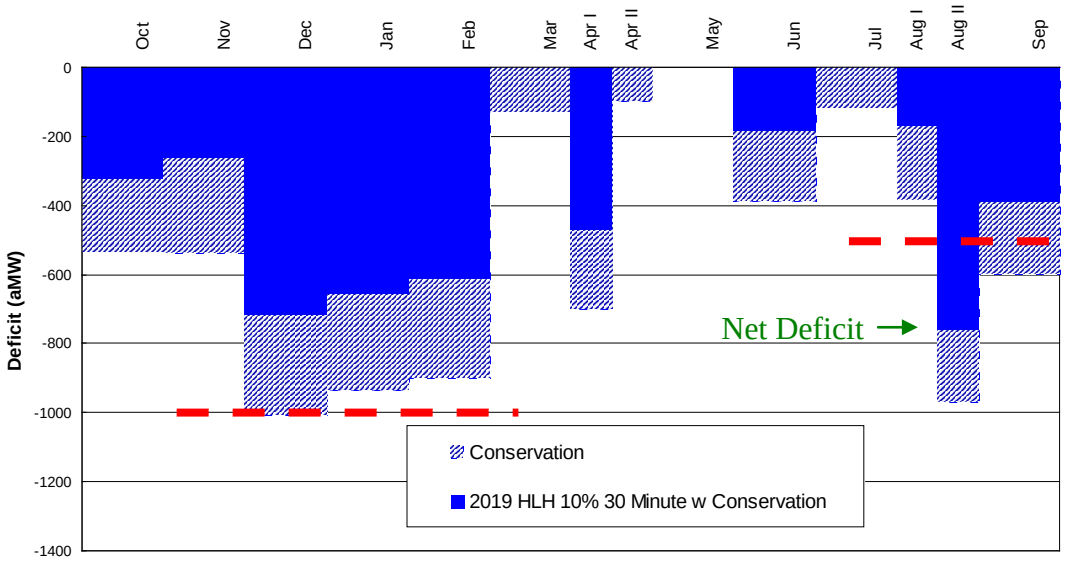
The figures below show that BPA would need additional Heavy Load Hour energy in late August in 2013, with or without factoring in additional conservation to meet the Council's targets and purchasing short- and mid-term power on the wholesale market up to the 500-megawatt summer market purchase threshold. In the winter months, conservation and the 1000-megawatt market purchase threshold would largely fill deficits. (The cross-hatched blue conservation areas in these graphs show reductions in BPA loads due to conservation achievements to the level of the Council's targets in its Sixth Power Plan, and the red dashed lines show the 500- and 1000-megawatt market purchase thresholds.)

2013 BPA Heavy Load Hour energy need at the 10th percentile



Similarly, in 2019, BPA will need additional Heavy Load Hour energy in late August beyond the 500-megawatt threshold amounts for short- and mid-term purchasing, whether or not the Council's conservation targets are met. For the winter, even if only the low estimate of conservation is achieved, BPA should not need to make additional purchases beyond the short- and mid-term purchases assumed by the 1000-megawatt threshold.

2019 BPA Heavy Load Hour energy need at the 10th percentile



BPA is working with regional utilities to develop technologies and operating techniques that could help meet these potential power supply needs. This area includes efforts to:

- Increase the flexibility of transmission grid operation to accommodate wind and other variable energy resources, through efforts such as the projects outlined in BPA's Wind Integration Team Work Plan
- Develop Smart Grid technologies, which also will increase transmission flexibility
- Directly involve electricity users through demand response programs

BPA is actively pursuing all these areas. The Resource Program analysis reinforces the importance of these efforts.

To support development of renewable and high-efficiency resources, BPA also will assess and identify cost-effective small-scale renewable and cogeneration resources in the Northwest considering customer interests and BPA's resource need.

In addition to relying on conservation as its highest priority resource, as a matter of sound business practice and to ensure reliability, BPA will continue to:

- Rely on wholesale power market purchases
- Monitor the areas of uncertainty, noted above, in order to adapt resource acquisition strategies as necessary
- Track, evaluate, and appropriately pursue availability of pumped storage and natural-gas-fired resources, such as combustion turbines, simple cycle turbines,

and/or reciprocating engines, to provide seasonal Heavy Load Hour energy and/or balancing reserves

Currently BPA does not foresee the need to acquire any major resources. There is need to begin rebuilding BPA's ability to acquire resources so that BPA is ready to move quickly to acquire power resources in the event additional energy and/or capacity are needed as the current load and regulatory uncertainties are resolved.

Action Plan

Most of BPA's incremental energy needs for the next several years can be reduced by meeting the conservation targets proposed in the Northwest Power and Conservation Council's Sixth Power Plan and through short- and mid-term market purchases. BPA may also face some additional needs for annual energy and likely will face additional needs for seasonal Heavy Load Hour energy and balancing reserves.

The scope of BPA's resource needs beyond those to be supplied from conservation and market purchases will depend in large part on the outcome of uncertainties in customer load placement and power supply preferences for FY 2015 and beyond, climate change legislation, economic recovery, and other unknowns.

This Action Plan presents actions BPA will undertake to help it prepare to meet a wide range of possible outcomes at lowest economic and environmental cost. This listing also indicates how BPA would propose to respond to actions called for in the Action Plan of the Council's Sixth Power Plan. This Action Plan primarily focuses on addressing outcomes presented by the Recovery and Modest Growth Scenario. However, as discussed throughout the Resource Program, there are a number of uncertainties or factors that could drive changes to the actions outlined here, and BPA needs to monitor those uncertainties. These factors are discussed in Resource Program section 9.8.

Conservation

Work with customers and regional stakeholders to achieve all cost-effective conservation measures necessary to meet public power's share of the Council's Sixth Power Plan regional conservation targets. Continue to collaborate with customers to determine the most-effective approach to structuring BPA's conservation programs and financing under Regional Dialogue contracts that will foster successful attainment of conservation targets, and measure and verify progress toward those targets. Transition to new structure by October 2011 when Regional Dialogue power sales begin.[1]

Participate in and support conservation infrastructure development. The Council included new Model Conservation Standards in its Sixth Power Plan. It also calls for continued market transformation efforts and development of additional conservation measures, including personal computer monitors, commercial outdoor lighting, and distribution system efficiency. BPA will continue to actively support market transformation, adoption of energy-efficient construction, and expansion of the menu of cost-effective conservation and widespread adoption of these measures. This support will be offered through BPA's participation in the Northwest Energy Efficiency Alliance, participation in the Regional Technical Forum and other regional venues, and sponsorship of research and development and pilot projects. In addition, BPA will work

[1] The Regional Dialogue Policy directs that BPA conservation costs are allocated in rates to the Tier 1 rate pool. Conservation stretches the resources of the existing Federal Base System and reduces utilities' above-High Water Mark loads.

collaboratively with the region to implement Northwest Energy Efficiency Taskforce recommendations.

Conduct demand response pilot programs and technology demonstrations. In the Sixth Power Plan, the Council calls on utilities to engage in research pilot programs that explore areas that have not been tried before and development and demonstration programs that are designed to test acquisition strategies and facilitate full-scale deployment. BPA is actively pursuing research pilot programs in the commercial and residential sectors. The results will inform the expansion of these pilots into demonstration programs.

Support improved data acquisition techniques for conservation measure verification to ensure valid long-term measure verification at lowest cost and with least intrusion on the time and privacy of participants in conservation programs.

Market purchases

Continue to consider the reliance on short- and mid-term market transactions to meet low-probability within-year seasonal needs as an alternative to committing to long-term resource acquisitions. BPA will continue to monitor and evaluate these guidelines in light of evolving wholesale market conditions. Reliance on the short- and mid-term markets will be closely considered in light of the significant uncertainty the agency faces in terms of future requirements.

Continue to consider longer-term market purchases to meet emerging seasonal and annual needs as an alternative to long-term resource acquisitions. BPA will continue to consider prudent use of longer-term market transactions to manage needs in advance of committing to long-term resource-based acquisitions. BPA will continue to evaluate the relative financial risks of longer-term market purchases compared to acquisition of output from specific resources. BPA will explore methods to enhance its ability to provide and obtain credit support for such transactions.

Variable energy resource integration and acquisition

Preserve and enhance the performance of the hydroelectric generating capability of the FCRPS. Invest in maintenance and capital asset improvements, upgrades, and replacements for the existing federal hydropower resources. Specific actions are conceived and reviewed through the FCRPS Asset Management Strategy, which is vetted publicly through BPA's Integrated Program Review. Specific capital investment decisions are made collaboratively by representatives from all three FCRPS operating agencies and reviewed by BPA's agency-level asset management processes.

Complete existing Wind Integration Team Work Plan projects. These projects will allow BPA to continue to integrate expected wind power into its transmission system and will begin to move BPA and other Northwest balancing authorities toward more flexible power scheduling and joint provision of balancing services.

Develop a formula rate option that can provide a price signal to variable energy resources locating in the BPA balancing authority area. If BPA needs to augment the existing federal system to provide additional balancing reserves, passing the costs of such augmentation directly to the users of balancing services could encourage lower cost alternatives.

Continue to participate in the Northwest Wind Integration Forum and work with regional entities and stakeholders to develop a long-term wind integration strategy.

Pursue further evaluation of potential benefits associated with cooperative, collaborative, and/or joint balancing authority functions such as greater use of dynamic scheduling and voluntary markets for the sharing of balancing resources through the Joint Initiative of ColumbiaGrid, WestConnect, and the Northern Tier Transmission Group.

Actively participate in Western Electricity Coordinating Council west-wide transmission and power planning efforts and in development of national North American Electric Reliability Corporation adequacy standards for variable generation.

Explore and assess small-scale, cost-effective renewables such as waste heat and bioresidue energy recovery, biomass generation, cogeneration, geothermal, and new small hydro. Additionally, identify opportunities for incremental improvements in efficiency and generation of non-federal facilities, consistent with item GEN-11 of the Council's Sixth Power Plan Action Plan.

Be prepared to address customer interest in Renewable Portfolio Standards-qualifying resources such as wind, geothermal, and biomass, and stand ready to acquire such resources under the Tier 2 Vintage rate structure where doing so will fill a corresponding BPA resource need.

Natural gas fired generation

Further evaluate natural gas fired flexible resources. Single-cycle combustion turbines and reciprocating engines perform well economically compared to other generating resource options as sources of flexibility, reserves, and seasonal Heavy Load Hour energy. However, they also produce carbon emissions. Continue to track and evaluate the economic and environmental tradeoffs associated with single-cycle combustion turbine and/or reciprocating engine capabilities to provide balancing reserves, seasonal energy, and, depending on siting, a reduction in transmission requirements.

Continue to track, evaluate, and appropriately pursue combined-cycle natural gas fired generation to supply future reserve requirements, seasonal/monthly energy, and annual energy. Should the high end of BPA's potential load obligations come to pass and BPA finds it requires resources beyond available cost-effective conservation, market purchases, and renewable energy supplies, combined cycle gas turbines would likely be one of BPA's top considerations. Combined-cycle gas turbines provide the lowest cost

and lowest emission profile of thermal baseload resources that are now widely available with large enough capacity to meet annual energy needs.

Sources of flexibility and energy storage

Actively pursue limited pilot programs for augmentation of system flexibility. BPA believes that participation in limited third-party pilot programs for flexibility augmentation will provide valuable operational and economic knowledge to support possible long-term flexibility solutions.

Evaluate flexibility augmentation options. The Council calls for a regional assessment of the relative availability, reliability, and cost effectiveness of resources that can augment the balancing capability of the Northwest power system, including pumped storage, compressed air energy storage, battery, Smart Grid, and demand-side options. BPA concurs with the Council that the Northwest Wind Integration Forum is the appropriate venue for this regional assessment.

Evaluate pumped storage and other energy storage options and pursue cost-effective alternatives. Pumped storage is widely used elsewhere to help accommodate variations in load. Pumped storage, compressed air energy storage, and other storage technologies could prove valuable for firming variable generation and/or providing diurnal reserves and/or Heavy Load Hour energy. BPA is conducting an evaluation of pumped storage potential; the initial evaluation is slated for completion in 2010. Initial studies indicate that reliability improvements to the Keys Pump-Generator Plant at the Grand Coulee complex will be beneficial for providing reserves for integrating variable generation. BPA will explore opportunities to test and evaluate the feasibility and cost-effectiveness of large-scale power storage technologies to increase system flexibility, improve reliability, and provide Heavy Load Hour energy and balancing reserves.

Emerging technologies

Continue to support research, development, and demonstration projects to foster technologies that may improve FCRPS cost-effectiveness, including new conservation and demand response techniques and methods to encourage consumer participation. For example:

- Smart Grid. BPA is a participant in the Pacific Northwest Smart Grid Demonstration Project, which includes five project infrastructure technology partners, 11 utilities, and the University of Washington. The Demonstration Project is managed by Battelle Memorial Institute, Pacific Northwest Division. Funded through a 50 percent cost share by the Department of Energy, the project will implement a number of demand response programs through participating utilities.
- Demand response technologies. In addition to the proven Demand Response technologies described in Chapter 6, BPA is leading demand response pilot projects in the Northwest to test the ability of emerging technologies to automate demand response, provide ancillary services, and facilitate wind integration.

Continue to monitor progress in development of relevant technologies for potential application to future Resource Programs. Monitoring will include Demand Response and Smart Grid technologies, energy storage, and emerging generating resources such as tidal and wave energy, enhanced geothermal, and others.

Improving methodologies

Continue to further develop tools and analytical methods to enhance BPA's capability to evaluate system needs and resource options. This is the first Resource Program BPA has produced since 1992. The nature of BPA's system needs has evolved considerably and continues to do so, necessitating development of new tools to analyze both the need and the effectiveness of various resources to meet it. BPA will:

- Work with its customers, the Council, and others to improve models and analytical techniques for load forecasting; needs assessment; resource adequacy assessment; comparative resource analysis, including economic analysis; and evaluation of technologies such as storage and demand management needed to integrate variable generation.
- Focus on improving techniques to discern the relative value of non-traditional means of meeting loads, such as demand response programs, Smart Grid technologies, and changes in transmission protocols.
- Continue to work with regional utilities, Northwest states, the Western Energy Renewable Zones initiative, and Western Electricity Coordinating Council to improve techniques for evaluating the relative merit of resources that require construction of new long-distance transmission compared to within-basin alternatives.
- With the Council, reestablish regular periodic assessments of resource availability, cost, and performance to support the Council's Power Plan and BPA's Resource Program.

Factors to monitor

For BPA, as for many utilities and agencies, planning for the wide range of uncertainty, given the current status of the regional, national, and global economy, is challenging. Historically, BPA's business practices have been focused on managing a portfolio of resources that, even under very dry water years, provided enough surplus energy and capacity to meet reasonable ranges in uncertainty. However, the range of possible futures and potential impacts to BPA's load-resource balance is wide. BPA will monitor, at a minimum, the following:

- National and regional economic growth indicators and impacts on loads
- Natural gas supplies and market trends
- Power market liquidity and trends including increased volatility and frequency of negative prices

- Climate change legislation
- Regional capacity constraints
- Implementation of Renewable Portfolio Standards in the Pacific Northwest and California
- Emergence and cost effectiveness of new technology

In summary, the timing and amount of BPA's resource needs beyond those to be supplied from conservation and market purchases will depend in large part on the outcome of uncertainties in customer load placement and power supply preferences for FY 2015 and beyond, carbon regulation, economic recovery, and many other uncertain future outcomes. This uncertain situation motivates BPA to actions that can help better prepare to meet a wide range of possible outcomes at lowest economic and environmental cost. In this quickly evolving environment, traditional distinctions between transmission planning, conservation program development, resource planning, and load forecasting are also changing. BPA's Resource Program will evolve with these changes.

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BONNEVILLE POWER ADMINISTRATION
DOE/BP-4192 • September 2010 • 1C

2010 Resource Program

Northwest Power & Conservation Council

October 14, 2010

Suzanne Cooper
Power Policy & Rates

Birgit Koehler
Regional Coordination

BONNEVILLE POWER ADMINISTRATION

Outline

- Background
- Needs Assessment
- Resource Evaluation Results
- Actions

Background

- BPA prepared the Resource Program to analyze potential resource needs to meet power supply obligations under Regional Dialogue contracts, which go into effect in fiscal year 2012.
- The Resource Program examines BPA's potential power supply needs through 2019.
- The Resource Program has been prepared considering the Sixth Power Plan of the Northwest Power and Conservation Council. Any eventual long-term major resource acquisitions also will be consistent with the Council's Sixth Power Plan.
- BPA released the 2009 draft Resource Program for comment on September 30, 2009.
- BPA released the final 2010 Resource Program on September 10, 2010.

BONNEVILLE POWER ADMINISTRATION

Needs Assessment Metrics

- Annual Average Energy at Critical Water
- Monthly Heavy Load Hour (HLH) at 10th Percentile (P10)
- 18-Hour Capacity (heat wave, cold spell)
- Flexibility/Dispatchability
  - Must be able to meet reserve requirement to integrate expected wind

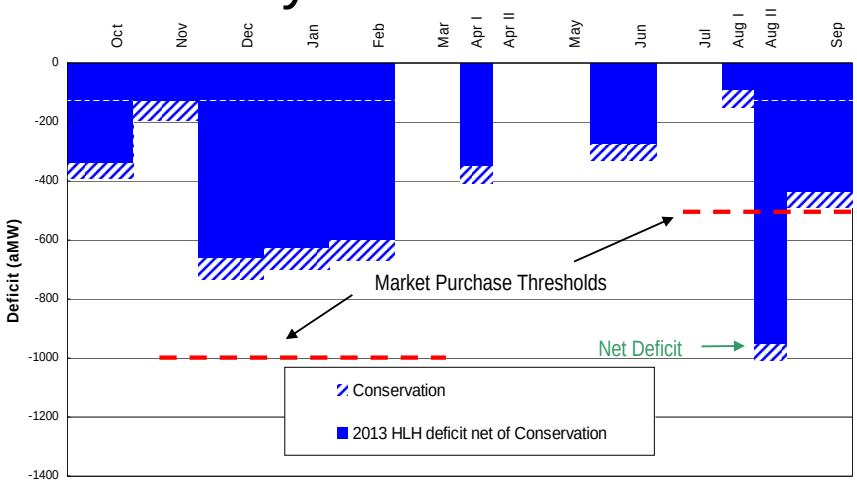
Annual Energy Results (Critical Water)

Deficit (aMW)	2013	2019
All currently contracted load (including Alcoa until 2016)	-350	-400
Estimated impact of Sixth Plan conservation on BPA's load obligation	50	200
Deficit net of additional conservation	-300	-200

- Does not include:
  - Additional DSI load (not yet contracted), service to new public agencies, additional service to DOE-Richland
  - Load growth uncertainty
  - Uncertainty in conservation (~100 MW range in 2013, ~300 MW range in 2019)

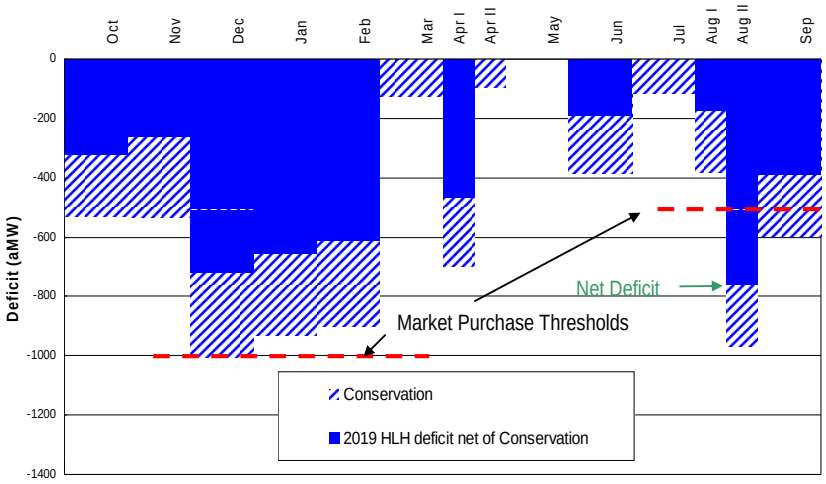
BONNEVILLE POWER ADMINISTRATION

2013 BPA Heavy Load Hour Need at 10th %



- The red horizontal dashed lines at -1000 MW (winter) and -500 MW (summer) reflect the threshold for long-term (greater than 5-year) advance purchasing. Deficits less than this threshold may be met by mid- and short-term purchases.
- Assumes Council's conservation targets will be met
- Does not include:
  - Additional DSI load, service to new public agencies, additional service to DOE-Richland
  - Load growth uncertainty
  - Uncertainty in conservation
  - Potential spill for all of August

2019 BPA Heavy Load Hour Need at 10th %



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- Assumes Council's conservation targets will be met
- Does not include:
  - Additional DSI load, service to new public agencies, additional service to DOE-Richland
  - Load growth uncertainty
  - Uncertainty in conservation
  - Potential spill for all of August

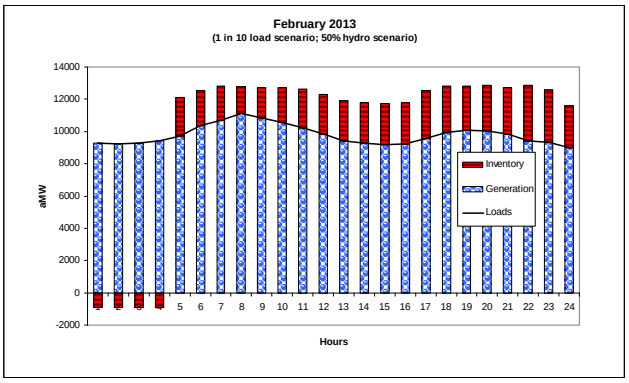
B O N N E V I L L E P O W E R A D M I N I S T R A T I O N

18-hour Capacity - Extreme Weather Events

- 1-in-10 year cold snap or heat wave→ High loads
- Median generation conditions (water, outages)
- 6 highest hours x 3 consecutive days

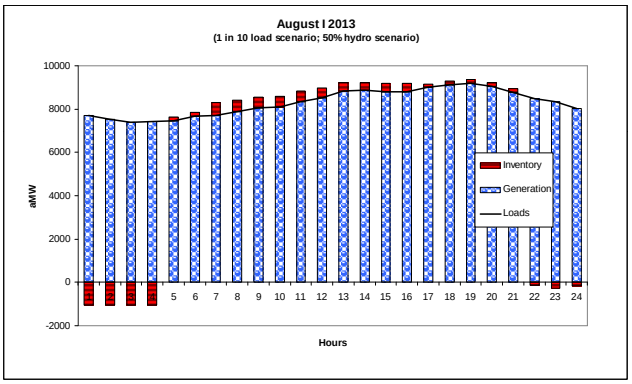
18-Hour Capacity 2013

Winter Cold Snap



18-hour Capacity: 1600 MW

Summer Heat Wave



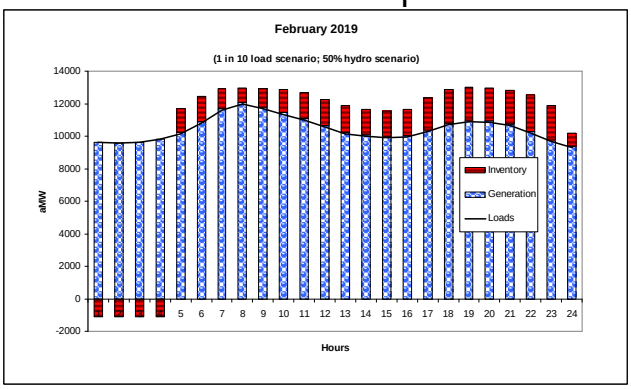
18-hour Capacity: 200 MW

- Does not include weather-responsive load uncertainty (up to 750 MW), load growth uncertainty, potential new load (additional DSI, new publics, expanded DOE-Richland)
- Does not include additional conservation, additional purchases needed to fill monthly Heavy Load Hour deficits

BONNEVILLE POWER ADMINISTRATION

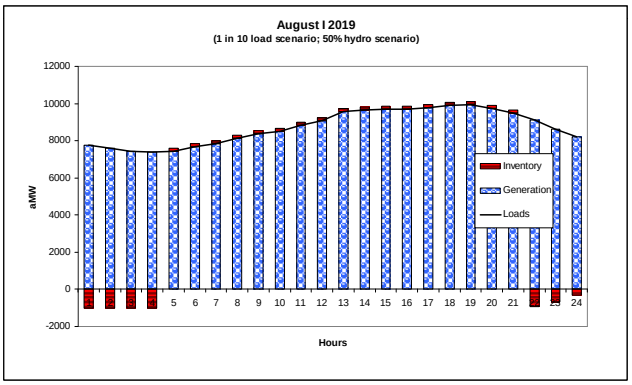
18-Hour Capacity 2019

Winter Cold Snap



18-hour Capacity: 1050 MW

Summer Heat Wave



18-hour Capacity: 150 MW

- Does not include weather-responsive load uncertainty (up to 750 MW), load growth uncertainty, potential new load (additional DSI, new publics, expanded DOE-Richland), reserves above levels for 2014
- Does not include additional conservation, additional purchases needed to fill monthly Heavy Load Hour deficits

Balancing Reserves for Wind and Load

Model Inputs: Reserve Requirements	2013	End of 2014 (used for 2019)
Wind Fleet Nameplate (MW)	6122	7322
INC (MW) modeled	1390	1564
DEC (MW) modeled	-1827	-2063

- Based on forecast of wind fleet size and required reserves completed in January 2010
- Modeling assumes BPA and region will need to succeed in efforts to reduce level of reserves FCRPS must supply.
- Low flows in April and high flows in June in 2010 have made it clear that events can stress the hydro system to the brink with the current wind fleet. Studies are ongoing to look closer at high and low flow scenarios with larger wind fleets with a goal of providing a definitive assessment of the FCRPS's ability to integrate wind.

BONNEVILLE POWER ADMINISTRATION

Uncertain Loads May Affect BPA Obligations

Potential Load	2013 (aMW)	2019 (aMW)
Additional DSI	160	480
New Publics	38	200
DOE Richland	5	70
Total contractual load uncertainty	203	750

Does not address:

- Long-term economic growth and load growth
- Conservation uncertainty
- Uncertainty in Above-HWM elections after 2014

Additional Uncertainties

- Amount of growth of wind in BPA balancing authority area and BPA reserve obligation
- Biological Opinion ruling
- Water conditions
- CGS performance
- Natural gas and electricity markets
- Climate change (physical impacts and legislation)

BONNEVILLE POWER ADMINISTRATION

Needs Assessment Summary

- Recent events have diminished BPA's near-term resource need:
  - the recession and continued down economy have lowered BPA's need for annual energy
  - customers have elected to serve a substantial portion of their above-High Water Mark load from sources other than BPA.
  - new transmission operating procedures are expected to lower BPA's need for balancing reserves
- Therefore BPA expects to satisfy most of its anticipated short-term supply needs first with conservation and then with mid- and short-term power purchases from the market
- Any additional need for power in the longer term depends in large part on a number of uncertainties, including:
  - customer choices, including public customers' above-HWM load placement past 2014
  - service to the DSIs
  - timing and strength of long-term economic growth, which will impact load growth
  - fish requirements that impact hydro generation
  - success of conservation efforts

Generating Resources to Address Needs

Metric	Candidate Resources
Annual Energy	▪ Incremental federal and non-federal hydro system improvements and new hydro development ▪ Small renewable generation ▪ Cogeneration and waste heat
Monthly/Seasonal HLH Energy	▪ Combined cycle combustion turbines ▪ Simple-cycle combustion turbines and reciprocating engines ▪ Pumped storage
Balancing Reserves	▪ Combined cycle combustion turbines ▪ Simple-cycle combustion turbines and reciprocating engines ▪ Pumped storage ▪ Hydro improvements or new hydro development with storage/load following capabilities

- **Candidate generating resources are after all cost-effective conservation**
- Candidate generating resources are not listed in order of cost-effectiveness or preference

BONNEVILLE POWER ADMINISTRATION

Actions

- Work with customers and regional stakeholders to achieve all cost-effective conservation measures necessary to meet public power's share of the Council's Sixth Power Plan regional conservation targets.
- Rely on wholesale power market purchases.
- Focus on efforts underway to increase the flexibility of transmission grid operation to support variable power sources.
- Continue to support research and development of relevant emerging technologies, such as Smart Grid and demand response.
- Monitor the areas of uncertainty, in order to adapt our resource acquisition strategies as necessary.
- Assess and identify cost-effective small-scale renewable and cogeneration resources in the Northwest considering customer interests and BPA resource needs.
- Evaluate and appropriately pursue pumped storage and natural gas-fired resources, such as combined and simple cycle combustion turbines and reciprocating engines, to provide seasonal heavy load hour energy or balancing reserves.

Appendix: Conservation Assumptions

Public Power's Share of Conservation	2013 (cumulative aMW)	2019 (cumulative aMW)
Total conservation to meet Sixth Power Plan Targets (Embedded plus Additional)	386	1,201
Range of uncertainty in total conservation	354 to 451	1,101 to 1,401
Conservation embedded in load forecast for Needs Assessment (~55 aMW annually)	212	530
Additional conservation to meet Sixth Power Plan Targets	174	671
Estimated impact of additional conservation on BPA's load obligation (Rounded to nearest 50)	50	200